

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
REQUEST FOR FILING NATIONAL PATENT APPLICATION

Under 35 USC 111(a) and Rule 53(b)

PATENT APPLICATION

Hon. Commissioner of Patents  
Washington, D.C. 20231

WITH SIGNED DECLARATION

JC691 U.S. PTO



11/13/00

NONPROVISIONAL  
NON REISSUE  
NON PCT NAT PHASE



Sir:

Herewith is the PATENT APPLICATION of  
Inventor(s): Slobodan JOVANOVIĆ et al.

Title METHOD OF DATA RATE EXCHANGE FOR  
TRANSMISSIONS ACROSS A PACKET-BASED NETWORK

Atty. Dkt.: PM 270173 | 12743MDUS02U  
M# Client Ref

including:

Date: November 13, 2000

1. Specification: 24 pages (only spec. and claims) 2. ☐ Specification in non-English language  
3. Declaration ☒ Original ☐ Facsimile/Copy ☒ Abstract 1 page(s); 35 numbered claims  
4. ☒ Drawings: 3 sheet(s) ☐ informal; ☒ formal of size: ☒ A4 ☐ 11"  
5. ☐ See top first page re prior Provisional, National or International application(s). ("X" box only if info is there and do not complete corresponding item 5 or 6). (Prior M# \_\_\_\_\_ SN \_\_\_\_\_)  
6. AMEND the specification please by inserting before the first line: -- This is a ☐ Continuation-in-Part  
☐ Divisional ☐ Continuation ☐ Substitute Application (MPEP 201.09) of:  
6(a) ☐ National Appln. No. \_\_\_\_\_ / filed \_\_\_\_\_ (M# \_\_\_\_\_)  
6(b) ☐ International Appln. No. \_\_\_\_\_ filed \_\_\_\_\_  
7. ☒ AMEND the specification by inserting before the first line: -- This application claims the benefit of U.S.  
Provisional Application No. 60/ 211,821 , filed June 15, 2000 .--  
8. ☒ Attached is an assignment and cover sheet. Please return the recorded assignment to the undersigned.  
9. ☐ Prior application is assigned to \_\_\_\_\_

by Assignment recorded \_\_\_\_\_ Reel \_\_\_\_\_ Frame \_\_\_\_\_

10. FOREIGN priority is claimed under 35 USC 119(a)-(d)/365(b) based on filing in \_\_\_\_\_

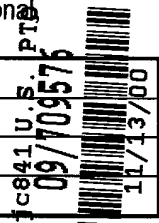
11. \_\_\_\_\_ (country)

Application No.	Filing Date	Application No.	Filing Date
(1)		(2)	
(3)		(4)	
(5)		(6)	
(7)		(8)	
(9)		<input type="checkbox"/> See 3 <sup>rd</sup> page for additional priorities	

12. \_\_\_\_\_ (No.) Certified copy (copies): ☐ attached; ☐ previously filed (date) \_\_\_\_\_  
in U.S. Application No. \_\_\_\_\_ / filed on \_\_\_\_\_  
13. Small entity status ☐ ☒ is not claimed; ☐ is claimed (Pre-filing confirmation required)  
13(a). ☐ Attached: \_\_\_\_\_ (No.) Small Entity Statement(s) (since 9/8/00 small entity statement(s) not essential to make claim)  
13(b) ☐ See NONPUBLICATION REQUEST under Rule 213(a) attached (PAT-258)

14. **DOMESTIC/INTERNATIONAL** priority is claimed under 35 USC 119(e)/120/365(c) based on the following provisional nonprovisional and/or PCT international application(s):

Application No.	Filing Date	Application No.	Filing Date
(1)		(4)	
(2)		(5)	
(3)		(6)	



15. ☐ This application is being filed under Rule 53(b)(2) since an inventor is named in the enclosed Declaration who was not named in the prior application.

16. ☐ Attached:

17. ☐ Preliminary Amendment:

**THE FOLLOWING FILING FEE IS BASED ON CLAIMS AS FILED LESS ANY ABOVE CANCELLED**

				Large/Small Entity		Fee Code
18. Basic Filing Fee				\$710/\$355	\$710	101/201
19. Total Effective Claims	35	minus 20 =	*15	x \$18/\$9 =	+ 270	103/203
20. Independent Claims	2	minus 3 =	*0	x \$80/\$40 =	+ 0	102/202
*If answer is zero or less, enter "0"						
21. If any proper multiple dependent claim (ignore improper) is present, add (Leave this line blank if this is a reissue application)				+ \$270/\$135	+ 0	104/204
22. TOTAL FILING FEE ENCLOSED =					\$980	
23. If "non-English" box 2 is X'd, add Rule 17(k) processing fee				+ \$130	+ 0	139
24. If "assignment" box 8 is X'd, add recording fee				+ \$40	+ 40	581
25. Attached is a Petition/Fee under Rule No.				+ \$130	+ 0	122
26. TOTAL FEE ENCLOSED =					\$1020	

Our Deposit Account No. 03-3975

Our Order No. 61473      0270173  
C#      M#

**CHARGE STATEMENT:** The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any missing or insufficient fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 (missing or insufficient fee only) now or hereafter relative to this application and the resulting Official document under Rule 20, or credit any overpayment, to our Account/Order Nos. shown above for which purpose a duplicate copy of this sheet is attached.

**This CHARGE STATEMENT does not authorize charge of the issue fee until/unless an issue fee transmittal form is filed.**

**Pillsbury Madison & Sutro LLP  
Intellectual Property Group**

1100 New York Avenue, NW  
Ninth Floor  
Washington, DC 20005-3918  
Tel: (202) 861-3000  
DSL/ERH:rmb

By Atty: Dale S. Lazar

Reg. No. 28872

Sig:

*[Signature]* 17698

Fax: (202) 822-0944  
Tel: (202) 861-3527

NOTE: File in duplicate with 2 post card receipts (PAT-103) & attachments

**UNITED STATES PATENT APPLICATION**

**OF**

**SLOBODAN JOVANOVIC,**

**MEHUL MEHTA,**

**&**

**ZONGYAO ZHOU**

**FOR**

**METHOD OF DATA RATE EXCHANGE FOR TRANSMISSIONS  
ACROSS A PACKET-BASED NETWORK**

*Prepared by:*

**PILLSBURY MADISON & SUTRO LLP  
INTELLECTUAL PROPERTY GROUP**

---

# METHOD OF DATA RATE EXCHANGE FOR TRANSMISSIONS ACROSS A PACKET-BASED NETWORK

5

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

This invention generally relates to the field of data communication systems. More particularly, the invention presents an improved method for exchanging data rate information across a packet-based network.

10  
15  
20  
25  
30  
35  
40  
45  
50  
55  
60  
65  
70  
75  
80  
85  
90  
95  
100  
105  
110  
115  
120  
125  
130  
135  
140  
145  
150  
155  
160  
165  
170  
175  
180  
185  
190  
195  
200  
205  
210  
215  
220  
225  
230  
235  
240  
245  
250  
255  
260  
265  
270  
275  
280  
285  
290  
295  
300  
305  
310  
315  
320  
325  
330  
335  
340  
345  
350  
355  
360  
365  
370  
375  
380  
385  
390  
395  
400  
405  
410  
415  
420  
425  
430  
435  
440  
445  
450  
455  
460  
465  
470  
475  
480  
485  
490  
495  
500  
505  
510  
515  
520  
525  
530  
535  
540  
545  
550  
555  
560  
565  
570  
575  
580  
585  
590  
595  
600  
605  
610  
615  
620  
625  
630  
635  
640  
645  
650  
655  
660  
665  
670  
675  
680  
685  
690  
695  
700  
705  
710  
715  
720  
725  
730  
735  
740  
745  
750  
755  
760  
765  
770  
775  
780  
785  
790  
795  
800  
805  
810  
815  
820  
825  
830  
835  
840  
845  
850  
855  
860  
865  
870  
875  
880  
885  
890  
895  
900  
905  
910  
915  
920  
925  
930  
935  
940  
945  
950  
955  
960  
965  
970  
975  
980  
985  
990  
995

### 2. Priority Information

The present application claims domestic priority, under 35 U.S.C. § 119(e), based on U.S. Provisional Application No. 60/211,821, filed by the same inventive entity, Jovanovic *et al.*, on June 15, 2000, entitled "Procedure for Data Rate Exchange of Data/Fax Transmission Across a Packet-Based Network."

### 3. Description of Related Art and General Background

With the unprecedented growth of the Internet, as well as the advances in computer technologies, the Public Switched Telephone Network (PSTN) has evolved into a main communication infrastructure for data traffic. Customer premise equipment (CPE) having communication capabilities, such as, for example, facsimile machines and modems, are now prevalent in both homes and offices. More often than not, CPEs rely on the PSTN infrastructure to provide connectivity to remote locations and support data traffic transport.

FIG. 1A depicts the conventional transport of data traffic across PSTN 108. As indicated in FIG. 1A, local CPE 102A and remote CPE 102B are respectively coupled by local access (i.e., local loop) to a telephone service provider's central switching office (CO) 104A, 104B. CPEs 102A, 102B are equipped with dial-up communication capabilities to initiate and establish connectivity. These capabilities operate in accordance with well-known communication protocols, such as, for example, ITU-T V series fax/data modem protocols, and in particular the V.34, *Series V: Data Communication Over the Telephone Network*, published in February 1998, the contents of which are herein expressly incorporated by reference. The V.34 protocol provides for the modulation, on-hook/off-hook, hand-shaking, and control signaling operations over PSTN 108.

Typically, a local CPE 102A initiates connectivity by dialing to remote CPE 102B, which accesses a switching mechanism in the local CO 104A. The local switching mechanism establishes an inter-office trunk connection to a remote switch in the remote CO 104B corresponding to the dialed remote CPE 102B. Upon achieving connectivity between the local CPE 102A and remote CPE 102B, a continuous, dedicated, circuit-switched, fixed channelized bandwidth is established for the duration of the call.

If the local and remote CPEs 102A, 102B are facsimile machines, the digital data scanned from the imaging portion is then modulated in an analog form suitable for transmission across the local loop wires and ultimately conveyed to the dialed facsimile machine. The transmission between the local CPE 102A and the remote CPE 102B operates in half-duplex mode. Similarly, if the local and remote CPEs 102A, 102B are modems, the digital data received from a connected computer is then modulated in an analog form suitable

for transmission across the local loop wires and ultimately conveyed to the dialed modem. In such a case, the transmission between the local CPE **102A** and the remote CPE **102B** operates in full-duplex mode.

There are, however, drawbacks in the use of PSTN **108** to accommodate data traffic.

5 For example, performance problems arise because data calls do not use the voice bandwidth efficiently. Data traffic tends to be bursty in nature and most of the time a data connection is not actually transmitting data, it is simply reserving the connection in case it might use it. In addition, PSTN **108** was designed with the assumption that a relatively short call set-up time would be followed by a large amount of voice data being transferred. However, for data transfers, the call set-up time in the PSTN **108** is very long relative to the length of the individual data transfers. This is exacerbated by the fact that, in order to minimize latency caused by call set-up times, most users leave their telephone connections off-hook for the entire time of the session, which may last several hours.

10 In an effort to alleviate some of these performance issues, telephone service providers have developed Packet-Based Networks (PBN) on top of the PSTN **108** infrastructure to handle data traffic. FIG. 1B illustrates the conventional transport of data traffic across PBN 110.

As depicted in FIG. 1B, local CPE **102A** and remote CPE **102B** are respectively coupled by local access to local and remote COs **104A**, **104B**. In turn, local and remote COs **104A**, **104B** are coupled to local and remote gateway mechanisms (GWs) **106A**, **106B**, via 20 PSTN **108A**, **108B**, respectively. Local and remote GWs **106A**, **106B** are configured to

demodulate the analog data traffic received from the local and remote COs **104A**, **104B** into digital data and redirect the digital data to PBN **110**.

Prior to conveying the digital data over the PBN **110**, communication protocols, such as, for example, the aforementioned V.34 protocol, establish a local communications session  
5 between the local CPE **102A** and local GW **106A** and a remote communications session between the remote CPE **102B** and remote GW **106B**. In order to ensure proper operation and data transfer between the respective CPEs **102A**, **102B** and GWs **104A**, **104B**, these local and remote sessions include various handshaking, negotiation, and training procedures (e.g., V. 34 Phase 2, Phase 3).

10 In particular, the V.34 protocol provides for the exchange of information sequences between the local CPE **102A** and GW **106A** and the remote CPE **102B** and GW **106B** during start-up, re-training, and re-negotiation sequences. These information sequences reflect the capabilities of, and the modulation parameters (e.g., MP, MP<sub>n</sub> sequences) supported by, the local and remote CPEs **102A**, **102B** and the local and remote GWs **104A**, **104B**. Embedded  
15 in the modulation parameter sequences, are the maximum data signaling rate supported by the local and remote CPEs **102A**, **102B** and the local and remote GWs **106A**, **106B**.

As such, prior to establishing the local and remote sessions, the maximum data signaling rates between the local CPE **102A** and GW **106A** and between the remote CPE **102B** and GW **106B** are exchanged and negotiated in order to determine the most suitable  
20 data signaling rates. There exists the possibility, however, that the most suitable data signaling rate between the local CPE **102A** and GW **106A** and the most suitable data signaling rate between the remote CPE **102B** and GW **106B** may be incompatible. At best,

such incompatibility may result in sub-optimal data transmission performance. At worst, such incompatibility may result in the loss of data.

### SUMMARY OF INVENTION

5       Methods and apparatuses consistent with the principles of the present invention, as embodied and broadly described herein, provide for a method of exchanging source-to-sink data rate information across a packet-based network. The method includes receiving, by a first gateway mechanism coupled to said network, data rate information from a first communication device that is configured to operate as a source, sink, or both. The method  
10 then determines a first data signaling rate between the first communication device and the first gateway mechanism. Similarly, a second gateway mechanism receives data rate information from a second communication device that is also configured as a source, sink, or both. The method then determines a second data signaling rate between the second communication device and the second gateway mechanism. The first gateway mechanism forwards the data  
15 rate information containing the first data signaling rate to the second gateway mechanism and the second gateway mechanism forwards the data rate information containing the second data signaling rate to the first gateway mechanism. The first communication device and the first gateway mechanism determine a maximum compatible source-to-sink data rate based on the first data signaling rate and the second data signaling rate received from the second gateway  
20 mechanism. The second communication device and the second gateway mechanism determine a maximum compatible source-to-sink data rate based on the second data signaling rate and the first data signaling rate received from the first gateway mechanism.



### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1A depicts a functional block diagram of a PSTN-based communication system.

FIG. 1B depicts a functional block diagram of a PBN-based communication system.

FIG. 2 depicts a signal flow diagram, constructed and operative in accordance with an embodiment of the present invention.

FIG. 3 depicts a flowchart, illustrating an example operation of an embodiment of the present invention.

### DETAILED DESCRIPTION OF THE INVENTION

The following detailed description refers to the accompanying drawings that illustrate embodiments of the present invention. Other embodiments are possible and modifications may be made to the embodiments without departing from the spirit and scope of the invention. Therefore, the following detailed description is not meant to limit the invention. Rather the scope of the invention is defined by the appended claims.

According to an embodiment of the present invention, as indicated in FIG. 2, a first (or local) communication device transmits modulation parameter information containing data signaling rate information to a first (or local) gateway mechanism. Similarly, a second (or remote) communication device transmits modulation parameter information containing data signaling rate information to a second (or remote) gateway mechanism. The data signaling

rate information for both the first and second communication devices represents the source-to-sink data rate. After determining the compatible data rate with the first communication device, the first gateway mechanism accordingly transmits the modulation parameter information to the second gateway mechanism. Similarly, after determining the compatible data rate with the second communication device, the second gateway mechanism commensurately transmits the modulation parameter information to the first gateway mechanism.

Upon receiving the modulation parameter information from the second gateway mechanism, the first gateway mechanism determines the maximum compatible source-to-sink data rate and accordingly sends the modulation parameter information to the first communication device. The sent modulation parameter information will be used to determine a compatible data signaling rate that takes into consideration the capabilities of the first communication device, the first gateway mechanism, the second communication device, and the second gateway mechanism. In like fashion, after receiving the modulation parameter information from the first gateway mechanism, the second gateway mechanism determines the maximum compatible source-to-sink data rate and accordingly sends the modulation parameter information to the second communication device. The sent modulation parameter information will be used to determine a compatible data signaling rate that takes into account the capabilities of the second communication device, the second gateway mechanism, the first communication device, and the first gateway mechanism.

In this manner, the first and second gateway mechanisms are forced to wait until they receive modulation parameter information from each other before settling on a source-to-sink

data rate. By doing so, the present invention ensures that a compatible source-to-sink data rate will be achieved between the first and second communication devices, thereby minimizing the possibility of lost data.

It is to be noted, that the terms “local” and “remote” will be used to simplify the foregoing description of the embodiments of the present invention. It will be appreciated that, because communication devices may transmit data in half- or full-duplex mode, use of the terms “local” and “remote” are not intended to infer half- or full-duplex operations unless expressly indicated otherwise.

FIG. 3 illustrates process 300, constructed to provide the exchange of data rate information across a packet-based network, in accordance with the present embodiment. As indicated in block B355, and in compliance with the V.34 protocol, the data signaling rates are negotiated during the start-up, retrain, and rate re-negotiation sequences. In block B360A, the local CPE 102A receives modulation parameter signals, indicative of the local data signaling rate information, from the local GW 106A. The local data signaling rate information includes information regarding the rates supported by the local CPE 102A. As noted in FIG. 2, the data signaling rate information from the local CPE 102A may be represented by MP<sub>AC</sub>.

Similarly, in block B360B, the remote GW 106B receives modulation parameter signals, indicative of the remote data signaling rate information, from the remote CPE 102B. The remote data signaling rate information includes information regarding the rates supported by the remote CPE 102B. As noted in FIG. 2, the data signaling rate information from the remote CPE 102B may be represented by MP<sub>BC</sub>.

In block **B365A**, process **300** determines a local data signaling rate  $d_A$ . Local data signaling rate  $d_A$  represents the maximum local data signaling rate that may be supported by both the local CPE **102A** and local GW **106A**. Local data signaling rate  $d_A$  may be captured and stored in local data signaling rate information  $MP_A$ . In like fashion, in block **B365B**, process  
5 **300** determines a remote data signaling rate  $d_B$ . Remote data signaling rate  $d_B$  represents the maximum remote data signaling rate that may be supported by both the remote CPE **102B** and remote GW **106B** and may be captured and stored in remote data signaling rate information  $MP_B$ . The determination of data signaling rate  $d_B$  may occur after the determination of data signaling rate  $d_A$ , although other interactions between the remote CPE **102B** and remote GW  
10 **106B** may be concurrent to the interactions between the local CPE **102B** and local GW **106B**

In block **B370A**, process **300** directs the forwarding of  $MP_A$  from the local GW **106A** to the remote GW **106B**. As noted in FIG. 2,  $MP_A$  is forwarded to remote GW **106B**. This ensures that the remote CPE **102B** and GW **106B** possess data signaling rate information about the local CPE **102A** and GW **106A**, prior to establishing a compatible end-to-end data signaling rate.  
15 Similarly, in block **B370B**, process **300** directs the forwarding of  $MP_B$  from the remote GW **106B** to the local GW **106A**. This ensures that the local CPE **102A** and GW **106A** possess data signaling rate information about the remote CPE **102B** and GW **106B**, prior to establishing a compatible data signaling rate.

In block **B375A**, process **300** determines whether local GW **106A** has received the  
20 remote data signaling rate information  $MP_B$  from remote GW **106B**. If GW **106A** has received  $MP_B$ , process **300** advances to block **B385A**. If GW **106A** has not received  $MP_B$ , process **300**, in block **B380A**, delays the further processing of GW **106A** until GW **106A** receives  $MP_B$ . Such

delay may be achieved by implementing non-functional modulation parameter signals or similar innocuous transactional signals, until the receipt of **MP<sub>B</sub>** is confirmed by GW **106A**.

Likewise, in block **B375B**, process **300** determines whether remote GW **106B** has received the local data signaling rate information **MP<sub>A</sub>** from local GW **106A**. If GW **106B** has received **MP<sub>A</sub>**, process **300** advances to block **B385B**. If GW **106B** has not received **MP<sub>A</sub>**, process **300**, in block **B380B**, delays the further processing of GW **106B** until GW **106B** confirms the receipt of **MP<sub>A</sub>**.

If local GW **106A** has received **MP<sub>B</sub>**, process **300**, in block **B385A**, determines a maximum source-to-sink data signaling rate  $d_{MAX}$  that is compatible with the remote data signaling rate  $d_B$  as well as the received local data signaling rate  $d_A$  included in **MP<sub>B</sub>**. In like fashion, process **300**, in block **B385B**, determines a maximum source-to-sink data signaling rate  $d_{MAX}$  that is compatible with the remote data signaling rate  $d_B$  as well as the received local data signaling rate  $d_A$  included in **MP<sub>A</sub>**. By doing so, process **300** ensures that the determined maximum source-to-sink data signaling rate  $d_{MAX}$  is compatible at both ends of the packet-based network **110**, thereby minimizing the possibility of lost data.

In block **B390A**, process **300** directs the local GW **106A** to send modulation parameter information to the local CPE **102A**. The modulation parameter information conveyed to the local CPE **102A** includes  $d_{MAX}$  as well as other information regarding the capabilities of local GW **106A** (indicated by **MP<sub>AG</sub>** in FIG. 2) and remote CPE **102B** (i.e., **MP<sub>B</sub>**). Similarly, process **300**, in block **B390B**, directs the remote GW **106B** to send modulation parameter information to the remote CPE **102B**, which includes  $d_{MAX}$  as well as local GW **106A** (indicated by **MP<sub>BG</sub>** in FIG. 2) and remote CPE **102B** (i.e., **MP<sub>B</sub>**) capabilities.

Finally, in block **B395**, process **300** allows for data transfers to occur between the local CPE **102A** and remote CPE **102B** at the maximum compatible source-to-sink data signaling rate  $d_{MAX}$ .

It will be appreciated that for half-duplex transmissions, such as in the case of CPEs **102A**, **102B** configured as facsimile machines, the maximum compatible source-to-sink data signaling rate  $d_{MAX}$  achieved by process **300** may be used by both CPEs **102A**, **102B**. That is, during the time interval when CPE **102A** operates as a source, CPE **102A** transmits to CPE **102B** at  $d_{MAX}$  and during the time interval that CPE **102B** operates as a source, CPE **102B** transmits to CPE **102A** at  $d_{MAX}$ .

It will also be appreciated that for full-duplex transmissions, such as in the case of CPEs **102A**, **102B** configured as modems, process **300** may be used to possibly determine two values for  $d_{MAX}$  (i.e.,  $d_{MAXA}$  and  $d_{MAXB}$ ). Because CPEs **102A**, **102B** both operate as sources and sinks concurrently during full-duplex operations, the maximum compatible source-to-sink data signaling rate  $d_{MAX}$  when CPE **102A** transmits to CPE **102B** may be different than the maximum compatible source-to-sink data signaling rate  $d_{MAX}$  when CPE **102B** transmits to CPE **102A**. As such, process **300** may be used to determine one value when CPE **102A** transmits to CPE **102B** (i.e.,  $d_{MAXA}$ ) and process **300** may be used to determine another value when CPE **102B** transmits to CPE **102A** (i.e.,  $d_{MAXB}$ ).

It will be apparent to one of ordinary skill in the art that the embodiments as described below may be implemented in many different embodiments of software, firmware, and hardware in the entities illustrated in the figures. The actual software code or specialized control hardware used to implement the present invention is not limiting of the present

invention. Thus, the operation and behavior of the embodiments will be described without specific reference to the actual software code or specialized hardware components. The absence of such specific references is feasible because it is clearly understood that artisans of ordinary skill would be able to design software and control hardware to implement the  
5   embodiments of the present invention based on the description herein.

Moreover, the processes associated with the presented embodiments may be stored in any storage device, such as, for example, non-volatile memory, an optical disk, magnetic tape, or magnetic disk. Furthermore, the processes may be programmed when the system is manufactured or via a computer-readable medium at a later date. Such a medium may include  
10   any of the forms listed above with respect to storage devices and may further include, for example, a carrier wave modulated, or otherwise manipulated, to convey instructions that can be read, demodulated/decoded and executed by the system.

The foregoing description of the preferred embodiments is provided to enable any person skilled in the art to make or use the present invention. Various modifications to these  
15   embodiments are possible, and the generic principles presented herein may be applied to other embodiments as well. For example, the invention may be implemented in part or in whole as a hard-wired circuit, as a circuit configuration fabricated into an application-specific integrated circuit, or as a firmware program loaded into non-volatile storage or a software program loaded from or into a data storage medium as machine-readable code, such code  
20   being instructions executable by an array of logic elements such as a microprocessor or other digital signal processing unit.

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	



## WHAT IS CLAIMED

1           1. A method for exchanging source-to-sink data rate information in a packet-based  
2 network, comprising:

3                 receiving, by a first gateway mechanism coupled to said network, data rate  
4 information from a first communication device, said first communication device configured to  
5 operate as at least one of a source and sink;

6                 determining a first data signaling rate between said first communication device  
7 and said first gateway mechanism;

8                 receiving, by a second gateway mechanism coupled to said network, data rate  
9 information from a second communication device, said second communication device  
10 configured to operate as at least one of a source and sink;

11                determining a second data signaling rate between said second communication  
12 device and said second gateway mechanism;

13                forwarding data rate information containing said first data signaling rate to said  
14 second gateway mechanism; and

15                forwarding data rate information containing said second data signaling rate to  
16 said first gateway mechanism,

17                wherein said first communication device and said first gateway mechanism  
18 determine a first maximum compatible source-to-sink data rate based on said first data  
19 signaling rate and said second data signaling rate received from said second gateway  
20 mechanism, and

21                wherein said second communication device and said second gateway  
22 mechanism determine a first maximum compatible source-to-sink data rate based on said  
23 second data signaling rate and said first data signaling rate received from said first gateway  
24 mechanism.

1                2. The method of Claim 1, wherein said first gateway mechanism implements a delay  
2 until it has received said data rate information containing said second data signaling rate from  
3 said second gateway mechanism.

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100  
101  
102  
103  
104  
105  
106  
107  
108  
109  
110  
111  
112  
113  
114  
115  
116  
117  
118  
119  
120  
121  
122  
123  
124  
125  
126  
127  
128  
129  
130  
131  
132  
133  
134  
135  
136  
137  
138  
139  
140  
141  
142  
143  
144  
145  
146  
147  
148  
149  
150  
151  
152  
153  
154  
155  
156  
157  
158  
159  
160  
161  
162  
163  
164  
165  
166  
167  
168  
169  
170  
171  
172  
173  
174  
175  
176  
177  
178  
179  
180  
181  
182  
183  
184  
185  
186  
187  
188  
189  
190  
191  
192  
193  
194  
195  
196  
197  
198  
199  
200  
201  
202  
203  
204  
205  
206  
207  
208  
209  
210  
211  
212  
213  
214  
215  
216  
217  
218  
219  
220  
221  
222  
223  
224  
225  
226  
227  
228  
229  
230  
231  
232  
233  
234  
235  
236  
237  
238  
239  
240  
241  
242  
243  
244  
245  
246  
247  
248  
249  
250  
251  
252  
253  
254  
255  
256  
257  
258  
259  
260  
261  
262  
263  
264  
265  
266  
267  
268  
269  
270  
271  
272  
273  
274  
275  
276  
277  
278  
279  
280  
281  
282  
283  
284  
285  
286  
287  
288  
289  
290  
291  
292  
293  
294  
295  
296  
297  
298  
299  
300  
301  
302  
303  
304  
305  
306  
307  
308  
309  
310  
311  
312  
313  
314  
315  
316  
317  
318  
319  
320  
321  
322  
323  
324  
325  
326  
327  
328  
329  
330  
331  
332  
333  
334  
335  
336  
337  
338  
339  
340  
341  
342  
343  
344  
345  
346  
347  
348  
349  
350  
351  
352  
353  
354  
355  
356  
357  
358  
359  
360  
361  
362  
363  
364  
365  
366  
367  
368  
369  
370  
371  
372  
373  
374  
375  
376  
377  
378  
379  
380  
381  
382  
383  
384  
385  
386  
387  
388  
389  
390  
391  
392  
393  
394  
395  
396  
397  
398  
399  
400  
401  
402  
403  
404  
405  
406  
407  
408  
409  
410  
411  
412  
413  
414  
415  
416  
417  
418  
419  
420  
421  
422  
423  
424  
425  
426  
427  
428  
429  
430  
431  
432  
433  
434  
435  
436  
437  
438  
439  
440  
441  
442  
443  
444  
445  
446  
447  
448  
449  
450  
451  
452  
453  
454  
455  
456  
457  
458  
459  
460  
461  
462  
463  
464  
465  
466  
467  
468  
469  
470  
471  
472  
473  
474  
475  
476  
477  
478  
479  
480  
481  
482  
483  
484  
485  
486  
487  
488  
489  
490  
491  
492  
493  
494  
495  
496  
497  
498  
499  
500  
501  
502  
503  
504  
505  
506  
507  
508  
509  
510  
511  
512  
513  
514  
515  
516  
517  
518  
519  
520  
521  
522  
523  
524  
525  
526  
527  
528  
529  
530  
531  
532  
533  
534  
535  
536  
537  
538  
539  
540  
541  
542  
543  
544  
545  
546  
547  
548  
549  
550  
551  
552  
553  
554  
555  
556  
557  
558  
559  
560  
561  
562  
563  
564  
565  
566  
567  
568  
569  
570  
571  
572  
573  
574  
575  
576  
577  
578  
579  
580  
581  
582  
583  
584  
585  
586  
587  
588  
589  
590  
591  
592  
593  
594  
595  
596  
597  
598  
599  
600  
601  
602  
603  
604  
605  
606  
607  
608  
609  
610  
611  
612  
613  
614  
615  
616  
617  
618  
619  
620  
621  
622  
623  
624  
625  
626  
627  
628  
629  
630  
631  
632  
633  
634  
635  
636  
637  
638  
639  
640  
641  
642  
643  
644  
645  
646  
647  
648  
649  
650  
651  
652  
653  
654  
655  
656  
657  
658  
659  
660  
661  
662  
663  
664  
665  
666  
667  
668  
669  
670  
671  
672  
673  
674  
675  
676  
677  
678  
679  
680  
681  
682  
683  
684  
685  
686  
687  
688  
689  
690  
691  
692  
693  
694  
695  
696  
697  
698  
699  
700  
701  
702  
703  
704  
705  
706  
707  
708  
709  
710  
711  
712  
713  
714  
715  
716  
717  
718  
719  
720  
721  
722  
723  
724  
725  
726  
727  
728  
729  
730  
731  
732  
733  
734  
735  
736  
737  
738  
739  
740  
741  
742  
743  
744  
745  
746  
747  
748  
749  
750  
751  
752  
753  
754  
755  
756  
757  
758  
759  
760  
761  
762  
763  
764  
765  
766  
767  
768  
769  
770  
771  
772  
773  
774  
775  
776  
777  
778  
779  
780  
781  
782  
783  
784  
785  
786  
787  
788  
789  
790  
791  
792  
793  
794  
795  
796  
797  
798  
799  
800  
801  
802  
803  
804  
805  
806  
807  
808  
809  
810  
811  
812  
813  
814  
815  
816  
817  
818  
819  
820  
821  
822  
823  
824  
825  
826  
827  
828  
829  
830  
831  
832  
833  
834  
835  
836  
837  
838  
839  
840  
841  
842  
843  
844  
845  
846  
847  
848  
849  
850  
851  
852  
853  
854  
855  
856  
857  
858  
859  
860  
861  
862  
863  
864  
865  
866  
867  
868  
869  
870  
871  
872  
873  
874  
875  
876  
877  
878  
879  
880  
881  
882  
883  
884  
885  
886  
887  
888  
889  
890  
891  
892  
893  
894  
895  
896  
897  
898  
899  
900  
901  
902  
903  
904  
905  
906  
907  
908  
909  
910  
911  
912  
913  
914  
915  
916  
917  
918  
919  
920  
921  
922  
923  
924  
925  
926  
927  
928  
929  
930  
931  
932  
933  
934  
935  
936  
937  
938  
939  
940  
941  
942  
943  
944  
945  
946  
947  
948  
949  
950  
951  
952  
953  
954  
955  
956  
957  
958  
959  
960  
961  
962  
963  
964  
965  
966  
967  
968  
969  
970  
971  
972  
973  
974  
975  
976  
977  
978  
979  
980  
981  
982  
983  
984  
985  
986  
987  
988  
989  
990  
991  
992  
993  
994  
995  
996  
997  
998  
999  
1000  
1001  
1002  
1003  
1004  
1005  
1006  
1007  
1008  
1009  
1010  
1011  
1012  
1013  
1014  
1015  
1016  
1017  
1018  
1019  
1020  
1021  
1022  
1023  
1024  
1025  
1026  
1027  
1028  
1029  
1030  
1031  
1032  
1033  
1034  
1035  
1036  
1037  
1038  
1039  
1040  
1041  
1042  
1043  
1044  
1045  
1046  
1047  
1048  
1049  
1050  
1051  
1052  
1053  
1054  
1055  
1056  
1057  
1058  
1059  
1060  
1061  
1062  
1063  
1064  
1065  
1066  
1067  
1068  
1069  
1070  
1071  
1072  
1073  
1074  
1075  
1076  
1077  
1078  
1079  
1080  
1081  
1082  
1083  
1084  
1085  
1086  
1087  
1088  
1089  
1090  
1091  
1092  
1093  
1094  
1095  
1096  
1097  
1098  
1099  
1100  
1101  
1102  
1103  
1104  
1105  
1106  
1107  
1108  
1109  
1110  
1111  
1112  
1113  
1114  
1115  
1116  
1117  
1118  
1119  
1120  
1121  
1122  
1123  
1124  
1125  
1126  
1127  
1128  
1129  
1130  
1131  
1132  
1133  
1134  
1135  
1136  
1137  
1138  
1139  
1140  
1141  
1142  
1143  
1144  
1145  
1146  
1147  
1148  
1149  
1150  
1151  
1152  
1153  
1154  
1155  
1156  
1157  
1158  
1159  
1160  
1161  
1162  
1163  
1164  
1165  
1166  
1167  
1168  
1169  
1170  
1171  
1172  
1173  
1174  
1175  
1176  
1177  
1178  
1179  
1180  
1181  
1182  
1183  
1184  
1185  
1186  
1187  
1188  
1189  
1190  
1191  
1192  
1193  
1194  
1195  
1196  
1197  
1198  
1199  
1200  
1201  
1202  
1203  
1204  
1205  
1206  
1207  
1208  
1209  
1210  
1211  
1212  
1213  
1214  
1215  
1216  
1217  
1218  
1219  
1220  
1221  
1222  
1223  
1224  
1225  
1226  
1227  
1228  
1229  
1230  
1231  
1232  
1233  
1234  
1235  
1236  
1237  
1238  
1239  
1240  
1241  
1242  
1243  
1244  
1245  
1246  
1247  
1248  
1249  
1250  
1251  
1252  
1253  
1254  
1255  
1256  
1257  
1258  
1259  
1260  
1261  
1262  
1263  
1264  
1265  
1266  
1267  
1268  
1269  
1270  
1271  
1272  
1273  
1274  
1275  
1276  
1277  
1278  
1279  
1280  
1281  
1282  
1283  
1284  
1285  
1286  
1287  
1288  
1289  
1290  
1291  
1292  
1293  
1294  
1295  
1296  
1297  
1298  
1299  
1300  
1301  
1302  
1303  
1304  
1305  
1306  
1307  
1308  
1309  
1310  
1311  
1312  
1313  
1314  
1315  
1316  
1317  
1318  
1319  
1320  
1321  
1322  
1323  
1324  
1325  
1326  
1327  
1328  
1329  
1330  
1331  
1332  
1333  
1334  
1335  
1336  
1337  
1338  
1339  
1340  
1341  
1342  
1343  
1344  
1345  
1346  
1347  
1348  
1349  
1350  
1351  
1352  
1353  
1354  
1355  
1356  
1357  
1358  
1359  
1360  
1361  
1362  
1363  
1364  
1365  
1366  
1367  
1368  
1369  
1370  
1371  
1372  
1373  
1374  
1375  
1376  
1377  
1378  
1379  
1380  
1381  
1382  
1383  
1384  
1385  
1386  
1387  
1388  
1389  
1390  
1391  
1392  
1393  
1394  
1395  
1396  
1397  
1398  
1399  
1400  
1401  
1402  
1403  
1404  
1405  
1406  
1407  
1408  
1409  
1410  
1411  
1412  
1413  
1414  
1415  
1416  
1417  
1418  
1419  
1420  
1421  
1422  
1423  
1424  
1425  
1426  
1427  
1428  
1429  
1430  
1431  
1432  
1433  
1434  
1435  
1436  
1437  
1438  
1439  
1440  
1441  
1442  
1443  
1444  
1445  
1446  
1447  
1448  
1449  
1450  
1451  
1452  
1453  
1454  
1455  
1456  
1457  
1458  
1459  
1460  
1461  
1462  
1463  
1464  
1465  
1466  
1467  
1468  
1469  
1470  
1471  
1472  
1473  
1474  
1475  
1476  
1477  
1478  
1479  
1480  
1481  
1482  
1483  
1484  
1485  
1486  
1487  
1488  
1489  
1490  
1491  
1492  
1493  
1494  
1495  
1496  
1497  
1498  
1499  
1500  
1501  
1502  
1503  
1504  
1505  
1506  
1507  
1508  
1509  
1510  
1511  
1512  
1513  
1514  
1515  
1516  
1517  
1518  
1519  
1520  
1521  
1522  
1523  
1524  
1525  
1526  
1527  
1528  
1529  
1530  
1531  
1532  
1533  
1534  
1535  
1536  
1537  
1538  
1539  
1540  
1541  
1542  
1543  
1544  
1545  
1546  
1547  
1548  
1549  
1550  
1551  
1552  
1553  
1554  
1555  
1556  
1557  
1558  
1559  
1560  
1561  
1562  
1563  
1564  
1565  
1566  
1567  
1568  
1569  
1570  
1571  
1572  
1573  
1574  
1575  
1576  
1577  
1578  
1579  
1580  
1581  
1582  
1583  
1584  
1585  
1586  
1587  
1588  
1589  
1590  
1591  
1592  
1593  
1594  
1595  
1596  
1597  
1598  
1599  
1600  
1601  
1602  
1603  
1604  
1605  
1606  
1607  
1608  
1609  
1610  
1611  
1612  
1613  
1614  
1615  
1616  
1617  
1618  
1619  
1620  
1621  
1622  
1623  
1624  
1625  
1626  
1627  
1628  
1629  
1630  
1631  
1632  
1633  
1634  
1635  
1636  
1637  
1638  
1639  
1640  
1641  
1642  
1643  
1644  
1645  
1646  
1647  
1648  
1649  
1650  
1651  
1652  
1653  
1654  
1655  
1656  
1657  
1658  
1659  
1660  
1661  
1662  
1663  
1664  
1665  
1666  
1667  
1668  
1669  
1670  
1671  
1672  
1673  
1674  
1675  
1676  
1677  
1678  
1679  
1680  
1681  
1682  
1683  
1684  
1685  
1686  
1687  
1688  
1689  
1690  
1691  
1692  
1693  
1694  
1695  
1696  
1697  
1698  
1699  
1700  
1701  
1702  
1703  
1704  
1705  
1706  
1707  
1708  
1709  
1710  
1711  
1712  
1713  
1714  
1715  
1716  
1717  
1718  
1719  
1720  
1721  
1722  
1723  
1724  
1725  
1726  
1727  
1728  
1729  
1730  
1731  
1732  
1733  
1734  
1735  
1736  
1737  
1738  
1739  
1740  
1741  
1742  
1743  
1744  
1745  
1746  
1747  
1748  
1749  
1750  
1751  
1752  
1753  
1754  
1755  
1756  
1757  
1758  
1759  
1760  
1761  
1762  
1763  
1764  
1765  
1766  
1767  
1768  
1769  
1770  
1771  
1772  
1773  
1774  
1775  
1776  
1777  
1778  
1779  
1780  
1781  
1782  
1783  
1784  
1785  
1786  
1787  
1788  
1789  
1790  
1791  
1792  
1793  
1794  
1795  
1796  
1797  
1798  
1799  
1800  
1801  
1802  
1803  
1804  
1805  
1806  
1807  
1808  
1809  
1810  
1811  
1812  
1813  
1814  
1815  
1816  
1817  
1818  
1819  
1820  
1821  
1822  
1823  
1824  
1825  
1826  
1827  
1828  
1829  
1830  
1831  
1832  
1833  
1834  
1835  
1836  
1837  
1838  
1839  
1840  
1841  
1842  
1843  
1844  
1845  
1846  
1847  
1848  
1849  
1850  
1851  
1852  
1853  
1854  
1855  
1856  
1857  
1858  
1859  
1860  
1861  
1862  
1863  
1864  
1865  
1866  
1867  
1868  
1869  
1870  
1871  
1872  
1873  
1874  
1875  
1876  
1877  
1878  
1879  
1880  
1881  
1882  
1883  
1884  
1885  
1886  
1887  
1888  
1889  
1890  
1891  
1892  
1893  
1894  
1895  
1896  
1897  
1898  
1899  
1900  
1901  
1902  
1903  
1904  
1905  
1906  
1907  
1908  
1909  
1910  
1911  
1912  
1913  
1914  
1915  
1916  
1917  
1918  
1919  
1920  
1921  
1922  
1923  
1924  
1925  
1926  
1927  
1928  
1929  
1930  
1931  
1932  
1933  
1934  
1935  
1936  
1937  
1938  
1939  
1940  
1941  
1942  
1943  
1944  
1945  
1946  
1947  
1948  
1949  
1950  
1951  
1952  
1953  
1954  
1955  
1956  
1957  
1958  
1959  
1960  
1961  
1962  
1963  
1964  
1965  
1966  
1967  
1968  
1969  
1970  
1971  
1972  
1973  
1974  
1975  
1976  
1977  
1978  
1979  
1980  
1981  
1982  
1983  
1984  
1985  
1986  
1987  
1988  
1989  
1990  
1991  
1992  
1993  
1994  
1995  
1996  
1997  
1998  
1999  
2000  
2001  
2002  
2003  
2004  
2005  
2006  
2007  
2008  
2009  
2010  
2011  
2012  
2013  
2014  
2015  
2016  
2017  
2018  
2019  
2020  
2021  
2022  
2023  
2024  
2025  
2026  
2027  
2028  
2029  
2030  
2031  
2032  
2033  
2034  
2035  
2036  
2037  
2038  
2039  
2040  
2041  
2042  
2043  
2044  
2045  
2046  
2047  
2048  
2049  
2050  
2051  
2052  
2053  
2054  
2055  
2056  
2057  
2058  
2059  
2060  
2061  
2062  
2063  
2064  
2065  
2066  
2067  
2068  
2069  
2070  
2071  
2072  
2073  
2074  
2075  
2076  
2077  
2078  
2079  
2080  
2081  
2082  
2083  
2084  
2085  
2086  
2087  
2088  
2089  
2090  
2091  
2092  
2093  
2094  
2095  
2096  
2097  
2098  
2099  
2100  
2101  
2102  
2103  
2104  
2105  
2106  
2107  
2108  
2109  
2110  
2111  
2112  
2113  
2114  
2115  
2116  
2117  
2118  
2119  
2120  
2121  
2122  
2123  
2124  
2125  
2126  
2127  
2128  
2129  
2130  
2131  
2132  
2133  
2134  
2135  
2136  
2137  
2138  
2139  
2140  
2141  
2142  
2143  
2144  
2145  
2146  
2147  
2148  
2149  
2150  
2151  
2152  
2153  
2154  
2155  
2156  
2157  
2158  
2159  
2160  
2161  
2162  
2163  
2164  
2165  
2166  
2167  
2168  
2169  
2170  
2171  
2172  
2173  
2174  
2175  
2176  
2177  
2178  
2179  
2180  
2181  
2182  
2183  
2184  
2185  
2186  
2187  
2188  
2189  
2190  
2191  
2192  
2193  
2194  
2195  
2196  
2197  
2198  
2199  
2200  
2201

1           6. The method of Claim 5, wherein said data rate information is configured as a  
2 modulation parameter sequence in accordance with any of the V series fax/data modem  
3 protocols.

1           7. The method of Claim 6, wherein said first gateway mechanism delay and said  
2 second gateway mechanism delay are implemented as a nonfunctional modulation parameter  
3 sequence.

1           8. The method of Claim 7, wherein, for half-duplex transmissions, said first  
2 communication device transmits data to said second communication device at said first  
3 maximum compatible source-to-sink data rate during a first interval of time when said first  
4 communication device operates as said source, and

5                 wherein said second communication device transmits data to said first  
6 communication device at said first maximum compatible source-to-sink data rate during a  
7 second interval of time when said second communication device operates as said source.

1           9. The method of Claim 8, wherein said first communication device and said second  
2 communication device are configured as facsimile machines operating in half-duplex  
3 transmission mode.

1           10. The method of Claim 7, further including,  
2                 determining a second maximum compatible source-to-sink data rate between  
3 said first communication device and said first gateway mechanism, based on said first data  
4 signaling rate and said second data signaling rate received from said second gateway  
5 mechanism, and

determining a second maximum compatible source-to-sink data rate between said second communication device and said second gateway mechanism, based on said second data signaling rate and said first data signaling rate received from said first gateway mechanism.

11. The method of Claim 10, wherein, for full-duplex transmissions, said first communication device transmits data to said second communication device at said first maximum compatible source-to-sink data rate and said second communication device transmits data to said first communication device at said second maximum compatible source-to-sink data rate.

12. The method of Claim 11, wherein said first communication device and said second communication device are configured as modems operating in full-duplex transmission mode.

13. An apparatus for exchanging source-to-sink data rate information in a packet-based network, comprising:

a first communication device configured to communicate data across said network and to operate as at least one of a source and sink of data;

a first gateway mechanism coupled to said network, said first gateway mechanism configured to receive data rate information from said first communication device to determine a first data signaling rate between said first communication device and said first gateway mechanism;

9 a second communication device configured to communicate data across said  
10 network and to operate as at least one of a source and sink of data;

11 a second gateway mechanism coupled to said network, said second gateway  
12 mechanism configured to receive data rate information from said second communication  
13 device to determine a second data signaling rate between said second communication device  
14 and said second gateway mechanism;

15 wherein said first gateway forwards data rate information containing said first  
16 data signaling rate to said second gateway mechanism and said second gateway mechanism  
17 forwards data rate information containing said second data signaling rate to said first gateway  
18 mechanism, and

19 wherein said first communication device and said first gateway mechanism  
20 determine a first maximum compatible source-to-sink data rate based on said first data  
21 signaling rate and said second data signaling rate received from said second gateway  
22 mechanism and said second communication device and said second gateway mechanism  
23 determine a first maximum compatible source-to-sink data rate based on said second data  
24 signaling rate and said first data signaling rate received from said first gateway mechanism.

1 14. The apparatus of Claim 13, wherein said first gateway mechanism implements a  
2 delay until it has received said data rate information containing said second data signaling rate  
3 from said second gateway mechanism.

1           15. The apparatus of Claim 14, wherein said second gateway mechanism implements  
2 a delay until it has received said data rate information containing said first data signaling rate  
3 from said first gateway mechanism.

1           16. The apparatus of Claim 15, wherein said first communication device and said first  
2 gateway mechanism determine said first maximum compatible source-to-sink data rate by  
3 selecting the maximum data rate supported by said first communication device, said first  
4 gateway mechanism, and said second data signaling rate.

1           17. The apparatus of Claim 16, wherein said second communication device and said  
2 second gateway mechanism determine said first maximum compatible source-to-sink data rate  
3 by selecting the maximum data rate supported by said second communication device, said  
4 second gateway mechanism, and said first data signaling rate.

1           18. The apparatus of Claim 17, wherein said data rate information is configured as a  
2 modulation parameter sequence in accordance with any of the V series fax/data modem  
3 protocols.

1           19. The apparatus of Claim 18, wherein said first gateway mechanism delay and said  
2 second gateway mechanism delay is implemented as a nonfunctional modulation parameter  
3 sequence.

1           20. The apparatus of Claim 19, wherein, for half-duplex transmissions, said first  
2 communication device transmits data to said second communication device at said first

3 maximum compatible source-to-sink data rate during a first interval of time when said first  
4 communication device operates as said source, and

5 wherein said second communication device transmits data to said first  
6 communication device at said first maximum compatible source-to-sink data rate during a  
7 second interval of time when said second communication device operates as said source.

1 21. The apparatus of Claim 20, wherein said first communication device and said  
2 second communication device are configured as facsimile machines operating in half-duplex  
3 transmission mode.

1 22. The apparatus of Claim 19, wherein said first communication device and said first  
2 gateway mechanism determine a second maximum compatible source-to-sink data rate, based  
3 on said first data signaling rate and said second data signaling rate received from said second  
4 gateway mechanism, and

5 wherein said second communication device and said second gateway  
6 mechanism determine a second maximum compatible source-to-sink data rate, based on said  
7 second data signaling rate and said first data signaling rate received from said first gateway  
8 mechanism.

1 23. The apparatus of Claim 22, wherein, for full-duplex transmissions, said first  
2 communication device transmits data to said second communication device at said first  
3 maximum compatible source-to-sink data rate and said second communication device  
4 transmits data to said first communication device at said second maximum compatible source-  
5 to-sink data rate.

1           24. A machine-readable medium encoded with a plurality of processor-executable  
2 instruction sequences for exchanging data rate information in a packet-based network, said  
3 instruction sequences comprising:

4                   receiving, by a first gateway mechanism coupled to said network, data rate  
5 information from a first communication device, said first communication device configured to  
6 operate as at least one of a source and sink;

7                   determining a first data signaling rate between said first communication device  
8 and said first gateway mechanism;

9                   receiving, by a second gateway mechanism coupled to said network, data rate  
10 information from a second communication device, said second communication device  
11 configured to operate as at least one of a source and sink;

12                   determining a second data signaling rate between said second communication  
13 device and said second gateway mechanism;

14                   forwarding data rate information containing said first data signaling rate to said  
15 second gateway mechanism; and

16                   forwarding data rate information containing said second data signaling rate to  
17 said first gateway mechanism,

18                   wherein said first communication device and said first gateway mechanism  
19 determine a first maximum compatible source-to-sink data rate based on said first data  
20 signaling rate and said second data signaling rate received from said second gateway  
21 mechanism, and



22                wherein said second communication device and said second gateway  
23 mechanism determine a first maximum compatible source-to-sink data rate based on said  
24 second data signaling rate and said first data signaling rate received from said first gateway  
25 mechanism.

1            25. The machine-readable medium of Claim 24, wherein said first gateway  
2 mechanism implements a delay until it has received said data rate information containing said  
3 second data signaling rate from said second gateway mechanism.

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100  
101  
102  
103  
104  
105  
106  
107  
108  
109  
110  
111  
112  
113  
114  
115  
116  
117  
118  
119  
120  
121  
122  
123  
124  
125  
126  
127  
128  
129  
130  
131  
132  
133  
134  
135  
136  
137  
138  
139  
140  
141  
142  
143  
144  
145  
146  
147  
148  
149  
150  
151  
152  
153  
154  
155  
156  
157  
158  
159  
160  
161  
162  
163  
164  
165  
166  
167  
168  
169  
170  
171  
172  
173  
174  
175  
176  
177  
178  
179  
180  
181  
182  
183  
184  
185  
186  
187  
188  
189  
190  
191  
192  
193  
194  
195  
196  
197  
198  
199  
200  
201  
202  
203  
204  
205  
206  
207  
208  
209  
210  
211  
212  
213  
214  
215  
216  
217  
218  
219  
220  
221  
222  
223  
224  
225  
226  
227  
228  
229  
230  
231  
232  
233  
234  
235  
236  
237  
238  
239  
240  
241  
242  
243  
244  
245  
246  
247  
248  
249  
250  
251  
252  
253  
254  
255  
256  
257  
258  
259  
260  
261  
262  
263  
264  
265  
266  
267  
268  
269  
270  
271  
272  
273  
274  
275  
276  
277  
278  
279  
280  
281  
282  
283  
284  
285  
286  
287  
288  
289  
290  
291  
292  
293  
294  
295  
296  
297  
298  
299  
300  
301  
302  
303  
304  
305  
306  
307  
308  
309  
310  
311  
312  
313  
314  
315  
316  
317  
318  
319  
320  
321  
322  
323  
324  
325  
326  
327  
328  
329  
330  
331  
332  
333  
334  
335  
336  
337  
338  
339  
340  
341  
342  
343  
344  
345  
346  
347  
348  
349  
350  
351  
352  
353  
354  
355  
356  
357  
358  
359  
360  
361  
362  
363  
364  
365  
366  
367  
368  
369  
370  
371  
372  
373  
374  
375  
376  
377  
378  
379  
380  
381  
382  
383  
384  
385  
386  
387  
388  
389  
390  
391  
392  
393  
394  
395  
396  
397  
398  
399  
400  
401  
402  
403  
404  
405  
406  
407  
408  
409  
410  
411  
412  
413  
414  
415  
416  
417  
418  
419  
420  
421  
422  
423  
424  
425  
426  
427  
428  
429  
430  
431  
432  
433  
434  
435  
436  
437  
438  
439  
440  
441  
442  
443  
444  
445  
446  
447  
448  
449  
450  
451  
452  
453  
454  
455  
456  
457  
458  
459  
460  
461  
462  
463  
464  
465  
466  
467  
468  
469  
470  
471  
472  
473  
474  
475  
476  
477  
478  
479  
480  
481  
482  
483  
484  
485  
486  
487  
488  
489  
490  
491  
492  
493  
494  
495  
496  
497  
498  
499  
500  
501  
502  
503  
504  
505  
506  
507  
508  
509  
510  
511  
512  
513  
514  
515  
516  
517  
518  
519  
520  
521  
522  
523  
524  
525  
526  
527  
528  
529  
530  
531  
532  
533  
534  
535  
536  
537  
538  
539  
540  
541  
542  
543  
544  
545  
546  
547  
548  
549  
550  
551  
552  
553  
554  
555  
556  
557  
558  
559  
560  
561  
562  
563  
564  
565  
566  
567  
568  
569  
570  
571  
572  
573  
574  
575  
576  
577  
578  
579  
580  
581  
582  
583  
584  
585  
586  
587  
588  
589  
590  
591  
592  
593  
594  
595  
596  
597  
598  
599  
600  
601  
602  
603  
604  
605  
606  
607  
608  
609  
610  
611  
612  
613  
614  
615  
616  
617  
618  
619  
620  
621  
622  
623  
624  
625  
626  
627  
628  
629  
630  
631  
632  
633  
634  
635  
636  
637  
638  
639  
640  
641  
642  
643  
644  
645  
646  
647  
648  
649  
650  
651  
652  
653  
654  
655  
656  
657  
658  
659  
660  
661  
662  
663  
664  
665  
666  
667  
668  
669  
670  
671  
672  
673  
674  
675  
676  
677  
678  
679  
680  
681  
682  
683  
684  
685  
686  
687  
688  
689  
690  
691  
692  
693  
694  
695  
696  
697  
698  
699  
700  
701  
702  
703  
704  
705  
706  
707  
708  
709  
710  
711  
712  
713  
714  
715  
716  
717  
718  
719  
720  
721  
722  
723  
724  
725  
726  
727  
728  
729  
730  
731  
732  
733  
734  
735  
736  
737  
738  
739  
740  
741  
742  
743  
744  
745  
746  
747  
748  
749  
750  
751  
752  
753  
754  
755  
756  
757  
758  
759  
760  
761  
762  
763  
764  
765  
766  
767  
768  
769  
770  
771  
772  
773  
774  
775  
776  
777  
778  
779  
780  
781  
782  
783  
784  
785  
786  
787  
788  
789  
790  
791  
792  
793  
794  
795  
796  
797  
798  
799  
800  
801  
802  
803  
804  
805  
806  
807  
808  
809  
810  
811  
812  
813  
814  
815  
816  
817  
818  
819  
820  
821  
822  
823  
824  
825  
826  
827  
828  
829  
830  
831  
832  
833  
834  
835  
836  
837  
838  
839  
840  
841  
842  
843  
844  
845  
846  
847  
848  
849  
850  
851  
852  
853  
854  
855  
856  
857  
858  
859  
860  
861  
862  
863  
864  
865  
866  
867  
868  
869  
870  
871  
872  
873  
874  
875  
876  
877  
878  
879  
880  
881  
882  
883  
884  
885  
886  
887  
888  
889  
890  
891  
892  
893  
894  
895  
896  
897  
898  
899  
900  
901  
902  
903  
904  
905  
906  
907  
908  
909  
910  
911  
912  
913  
914  
915  
916  
917  
918  
919  
920  
921  
922  
923  
924  
925  
926  
927  
928  
929  
930  
931  
932  
933  
934  
935  
936  
937  
938  
939  
940  
941  
942  
943  
944  
945  
946  
947  
948  
949  
950  
951  
952  
953  
954  
955  
956  
957  
958  
959  
960  
961  
962  
963  
964  
965  
966  
967  
968  
969  
970  
971  
972  
973  
974  
975  
976  
977  
978  
979  
980  
981  
982  
983  
984  
985  
986  
987  
988  
989  
990  
991  
992  
993  
994  
995  
996  
997  
998  
999  
1000  
1001  
1002  
1003  
1004  
1005  
1006  
1007  
1008  
1009  
1010  
1011  
1012  
1013  
1014  
1015  
1016  
1017  
1018  
1019  
1020  
1021  
1022  
1023  
1024  
1025  
1026  
1027  
1028  
1029  
1030  
1031  
1032  
1033  
1034  
1035  
1036  
1037  
1038  
1039  
1040  
1041  
1042  
1043  
1044  
1045  
1046  
1047  
1048  
1049  
1050  
1051  
1052  
1053  
1054  
1055  
1056  
1057  
1058  
1059  
1060  
1061  
1062  
1063  
1064  
1065  
1066  
1067  
1068  
1069  
1070  
1071  
1072  
1073  
1074  
1075  
1076  
1077  
1078  
1079  
1080  
1081  
1082  
1083  
1084  
1085  
1086  
1087  
1088  
1089  
1090  
1091  
1092  
1093  
1094  
1095  
1096  
1097  
1098  
1099  
1100  
1101  
1102  
1103  
1104  
1105  
1106  
1107  
1108  
1109  
1110  
1111  
1112  
1113  
1114  
1115  
1116  
1117  
1118  
1119  
1120  
1121  
1122  
1123  
1124  
1125  
1126  
1127  
1128  
1129  
1130  
1131  
1132  
1133  
1134  
1135  
1136  
1137  
1138  
1139  
1140  
1141  
1142  
1143  
1144  
1145  
1146  
1147  
1148  
1149  
1150  
1151  
1152  
1153  
1154  
1155  
1156  
1157  
1158  
1159  
1160  
1161  
1162  
1163  
1164  
1165  
1166  
1167  
1168  
1169  
1170  
1171  
1172  
1173  
1174  
1175  
1176  
1177  
1178  
1179  
1180  
1181  
1182  
1183  
1184  
1185  
1186  
1187  
1188  
1189  
1190  
1191  
1192  
1193  
1194  
1195  
1196  
1197  
1198  
1199  
1200  
1201  
1202  
1203  
1204  
1205  
1206  
1207  
1208  
1209  
1210  
1211  
1212  
1213  
1214  
1215  
1216  
1217  
1218  
1219  
1220  
1221  
1222  
1223  
1224  
1225  
1226  
1227  
1228  
1229  
1230  
1231  
1232  
1233  
1234  
1235  
1236  
1237  
1238  
1239  
1240  
1241  
1242  
1243  
1244  
1245  
1246  
1247  
1248  
1249  
1250  
1251  
1252  
1253  
1254  
1255  
1256  
1257  
1258  
1259  
1260  
1261  
1262  
1263  
1264  
1265  
1266  
1267  
1268  
1269  
1270  
1271  
1272  
1273  
1274  
1275  
1276  
1277  
1278  
1279  
1280  
1281  
1282  
1283  
1284  
1285  
1286  
1287  
1288  
1289  
1290  
1291  
1292  
1293  
1294  
1295  
1296  
1297  
1298  
1299  
1300  
1301  
1302  
1303  
1304  
1305  
1306  
1307  
1308  
1309  
1310  
1311  
1312  
1313  
1314  
1315  
1316  
1317  
1318  
1319  
1320  
1321  
1322  
1323  
1324  
1325  
1326  
1327  
1328  
1329  
1330  
1331  
1332  
1333  
1334  
1335  
1336  
1337  
1338  
1339  
1340  
1341  
1342  
1343  
1344  
1345  
1346  
1347  
1348  
1349  
1350  
1351  
1352  
1353  
1354  
1355  
1356  
1357  
1358  
1359  
1360  
1361  
1362  
1363  
1364  
1365  
1366  
1367  
1368  
1369  
1370  
1371  
1372  
1373  
1374  
1375  
1376  
1377  
1378  
1379  
1380  
1381  
1382  
1383  
1384  
1385  
1386  
1387  
1388  
1389  
1390  
1391  
1392  
1393  
1394  
1395  
1396  
1397  
1398  
1399  
1400  
1401  
1402  
1403  
1404  
1405  
1406  
1407  
1408  
1409  
1410  
1411  
1412  
1413  
1414  
1415  
1416  
1417  
1418  
1419  
1420  
1421  
1422  
1423  
1424  
1425  
1426  
1427  
1428  
1429  
1430  
1431  
1432  
1433  
1434  
1435  
1436  
1437  
1438  
1439  
1440  
1441  
1442  
1443  
1444  
1445  
1446  
1447  
1448  
1449  
1450  
1451  
1452  
1453  
1454  
1455  
1456  
1457  
1458  
1459  
1460  
1461  
1462  
1463  
1464  
1465  
1466  
1467  
1468  
1469  
1470  
1471  
1472  
1473  
1474  
1475  
1476  
1477  
1478  
1479  
1480  
1481  
1482  
1483  
1484  
1485  
1486  
1487  
1488  
1489  
1490  
1491  
1492  
1493  
1494  
1495  
1496  
1497  
1498  
1499  
1500  
1501  
1502  
1503  
1504  
1505  
1506  
1507  
1508  
1509  
1510  
1511  
1512  
1513  
1514  
1515  
1516  
1517  
1518  
1519  
1520  
1521  
1522  
1523  
1524  
1525  
1526  
1527  
1528  
1529  
1530  
1531  
1532  
1533  
1534  
1535  
1536  
1537  
1538  
1539  
1540  
1541  
1542  
1543  
1544  
1545  
1546  
1547  
1548  
1549  
1550  
1551  
1552  
1553  
1554  
1555  
1556  
1557  
1558  
1559  
1560  
1561  
1562  
1563  
1564  
1565  
1566  
1567  
1568  
1569  
1570  
1571  
1572  
1573  
1574  
1575  
1576  
1577  
1578  
1579  
1580  
1581  
1582  
1583  
1584  
1585  
1586  
1587  
1588  
1589  
1590  
1591  
1592  
1593  
1594  
1595  
1596  
1597  
1598  
1599  
1600  
1601  
1602  
1603  
1604  
1605  
1606  
1607  
1608  
1609  
1610  
1611  
1612  
1613  
1614  
1615  
1616  
1617  
1618  
1619  
1620  
1621  
1622  
1623  
1624  
1625  
1626  
1627  
1628  
1629  
1630  
1631  
1632  
1633  
1634  
1635  
1636  
1637  
1638  
1639  
1640  
1641  
1642  
1643  
1644  
1645  
1646  
1647  
1648  
1649  
1650  
1651  
1652  
1653  
1654  
1655  
1656  
1657  
1658  
1659  
1660  
1661  
1662  
1663  
1664  
1665  
1666  
1667  
1668  
1669  
1670  
1671  
1672  
1673  
1674  
1675  
1676  
1677  
1678  
1679  
1680  
1681  
1682  
1683  
1684  
1685  
1686  
1687  
1688  
1689  
1690  
1691  
1692  
1693  
1694  
1695  
1696  
1697  
1698  
1699  
1700  
1701  
1702  
1703  
1704  
1705  
1706  
1707  
1708  
1709  
1710  
1711  
1712  
1713  
1714  
1715  
1716  
1717  
1718  
1719  
1720  
1721  
1722  
1723  
1724  
1725  
1726  
1727  
1728  
1729  
1730  
1731  
1732  
1733  
1734  
1735  
1736  
1737  
1738  
1739  
1740  
1741  
1742  
1743  
1744  
1745  
1746  
1747  
1748  
1749  
1750  
1751  
1752  
1753  
1754  
1755  
1756  
1757  
1758  
1759  
1760  
1761  
1762  
1763  
1764  
1765  
1766  
1767  
1768  
1769  
1770  
1771  
1772  
1773  
1774  
1775  
1776  
1777  
1778  
1779  
1780  
1781  
1782  
1783  
1784  
1785  
1786  
1787  
1788  
1789  
1790  
1791  
1792  
1793  
1794  
1795  
1796  
1797  
1798  
1799  
1800  
1801  
1802  
1803  
1804  
1805  
1806  
1807  
1808  
1809  
1810  
1811  
1812  
1813  
1814  
1815  
1816  
1817  
1818  
1819  
1820  
1821  
1822  
1823  
1824  
1825  
1826  
1827  
1828  
1829  
1830  
1831  
1832  
1833  
1834  
1835  
1836  
1837  
1838  
1839  
1840  
1841  
1842  
1843  
1844  
1845  
1846  
1847  
1848  
1849  
1850  
1851  
1852  
1853  
1854  
1855  
1856  
1857  
1858  
1859  
1860  
1861  
1862  
1863  
1864  
1865  
1866  
1867  
1868  
1869  
1870  
1871  
1872  
1873  
1874  
1875  
1876  
1877  
1878  
1879  
1880  
1881  
1882  
1883  
1884  
1885  
1886  
1887  
1888  
1889  
1890  
1891  
1892  
1893  
1894  
1895  
1896  
1897  
1898  
1899  
1900  
1901  
1902  
1903  
1904  
1905  
1906  
1907  
1908  
1909  
1910  
1911  
1912  
1913  
1914  
1915  
1916  
1917  
1918  
1919  
1920  
1921  
1922  
1923  
1924  
1925  
1926  
1927  
1928  
1929  
1930  
1931  
1932  
1933  
1934  
1935  
1936  
1937  
1938  
1939  
1940  
1941  
1942  
1943  
1944  
1945  
1946  
1947  
1948  
1949  
1950  
1951  
1952  
1953  
1954  
1955  
1956  
1957  
1958  
1959  
1960  
1961  
1962  
1963  
1964  
1965  
1966  
1967  
1968  
1969  
1970  
1971  
1972  
1973  
1974  
1975  
1976  
1977  
1978  
1979  
1980  
1981  
1982  
1983  
1984  
1985  
1986  
1987  
1988  
1989  
1990  
1991  
1992  
1993  
1994  
1995  
1996  
1997  
1998  
1999  
2000  
2001  
2002  
2003  
2004  
2005  
2006  
2007  
2008  
2009  
2010  
2011  
2012  
2013  
2014  
2015  
2016  
2017  
2018  
2019  
2020  
2021  
2022  
2023  
2024  
2025  
2026  
2027  
2028  
2029  
2030  
2031  
2032  
2033  
2034  
2035  
2036  
2037  
2038  
2039  
2040  
2041  
2042  
2043  
2044  
2045  
2046  
2047  
2048  
2049  
2050  
2051  
2052  
2053  
2054  
2055  
2056  
2057  
2058  
2059  
2060  
2061  
2062  
2063  
2064  
2065  
2066  
2067  
2068  
2069  
2070  
2071  
2072  
2073  
2074  
2075  
2076  
2077  
2078  
2079  
2080  
2081  
2082  
2083  
2084  
2085  
2086  
2087  
2088  
2089  
2090  
2091  
2092  
2093  
2094  
2095  
2096  
2097  
2098  
2099  
2100  
2101  
2102  
2103  
2104  
2105  
2106  
2107  
2108  
2109  
2110  
2111  
2112  
2113  
2114  
2115  
2116  
2117  
2118  
2119  
2120  
2121  
2122  
2123  
2124  
2125  
2126  
2127  
2128  
2129  
2130  
2131  
2132  
2133  
2134  
2135  
2136  
2137  
2138  
2139  
2140  
2141  
2142  
2143  
2144  
2145  
2146  
2147  
2148  
2149  
2150  
2151  
2152  
2153  
2154  
2155  
2156  
2157  
2158  
2159  
2160  
2161  
2162  
2163  
2164  
2165  
2166  
2167  
2168  
2169  
2170  
2171  
2172  
2173  
2174  
2175  
2176  
2177  
2178  
2179  
2180  
2181  
2182  
2183  
2184  
2185  
2186  
2187  
2188  
2189  
2190  
2191  
2192  
2193  
2194  
2195  
2196  
2197  
2198  
2199  
2200  
22

1           30. The machine-readable medium of Claim 29, wherein said first gateway  
2 mechanism delay and said second gateway mechanism delay are implemented as a  
3 nonfunctional modulation parameter sequence.

1           31. The machine-readable medium of Claim 30, wherein, for half-duplex  
2 transmissions, said first communication device transmits data to said second communication  
3 device at said first maximum compatible source-to-sink data rate during a first interval of time  
4 when said first communication device operates as said source, and

5           wherein said second communication device transmits data to said first  
6 communication device at said first maximum compatible source-to-sink data rate during a  
7 second interval of time when said second communication device operates as said source.

1           32. The machine-readable medium of Claim 31, wherein said first communication  
2 device and said second communication device are configured as facsimile machines operating  
3 in half-duplex transmission mode.

1           33. The machine-readable medium of Claim 30, further including,

2           determining a second maximum compatible source-to-sink data rate between  
3 said first communication device and said first gateway mechanism, based on said first data  
4 signaling rate and said second data signaling rate received from said second gateway  
5 mechanism, and

6           determining a second maximum compatible source-to-sink data rate between  
7 said second communication device and said second gateway mechanism, based on said

8 second data signaling rate and said first data signaling rate received from said first gateway  
9 mechanism.

1 34. The method of Claim 33, wherein, for full-duplex transmissions, said first  
2 communication device transmits data to said second communication device at said first  
3 maximum compatible source-to-sink data rate and said second communication device  
4 transmits data to said first communication device at said second maximum compatible source-  
5 to-sink data rate.

1 35. The machine-readable medium of Claim 34, wherein said first communication  
2 device and said second communication device are configured as modems operating in full-  
3 duplex transmission mode.

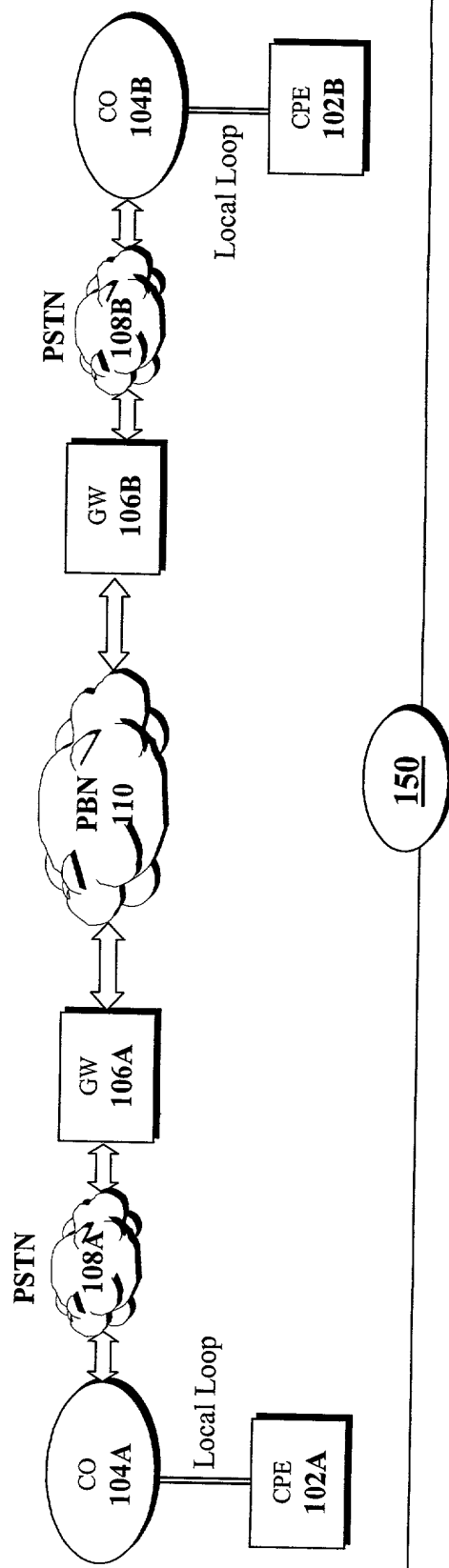
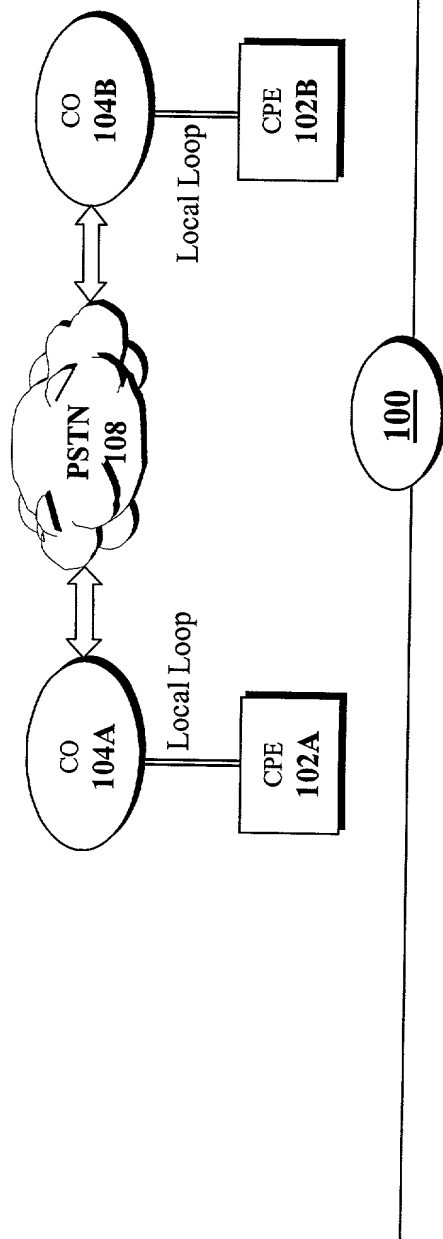
## METHOD OF DATA RATE EXCHANGE FOR TRANSMISSIONS ACROSS A PACKET-BASED NETWORK

5

### ABSTRACT OF THE DISCLOSURE

A method and apparatus for exchanging data rate information across a packet-based network, is presented herein. In accordance with an embodiment of the invention, a first and second communication device, configured to operate as data sources, sinks, or both, communicate with a first and second gateway mechanism, respectively. The first gateway mechanism receives data rate information from the first communication device to determine a first data signaling rate between the first communication device and the first gateway mechanism. Similarly, the second gateway mechanism receives data rate information from the second communication device to determine a second data signaling rate between the second communication device and the second gateway mechanism. The first gateway forwards data rate information containing the first data signaling rate to the second gateway mechanism and the second gateway mechanism forwards data rate information containing the second data signaling rate to the first gateway mechanism. The first communication device and the first gateway mechanism determine a maximum compatible source-to-sink data rate based on the first data signaling rate and the second data signaling rate received from the second gateway mechanism and the second communication device and the second gateway mechanism determine a maximum compatible source-to-sink data rate based on the second data signaling rate and the first data signaling rate received from the first gateway mechanism.

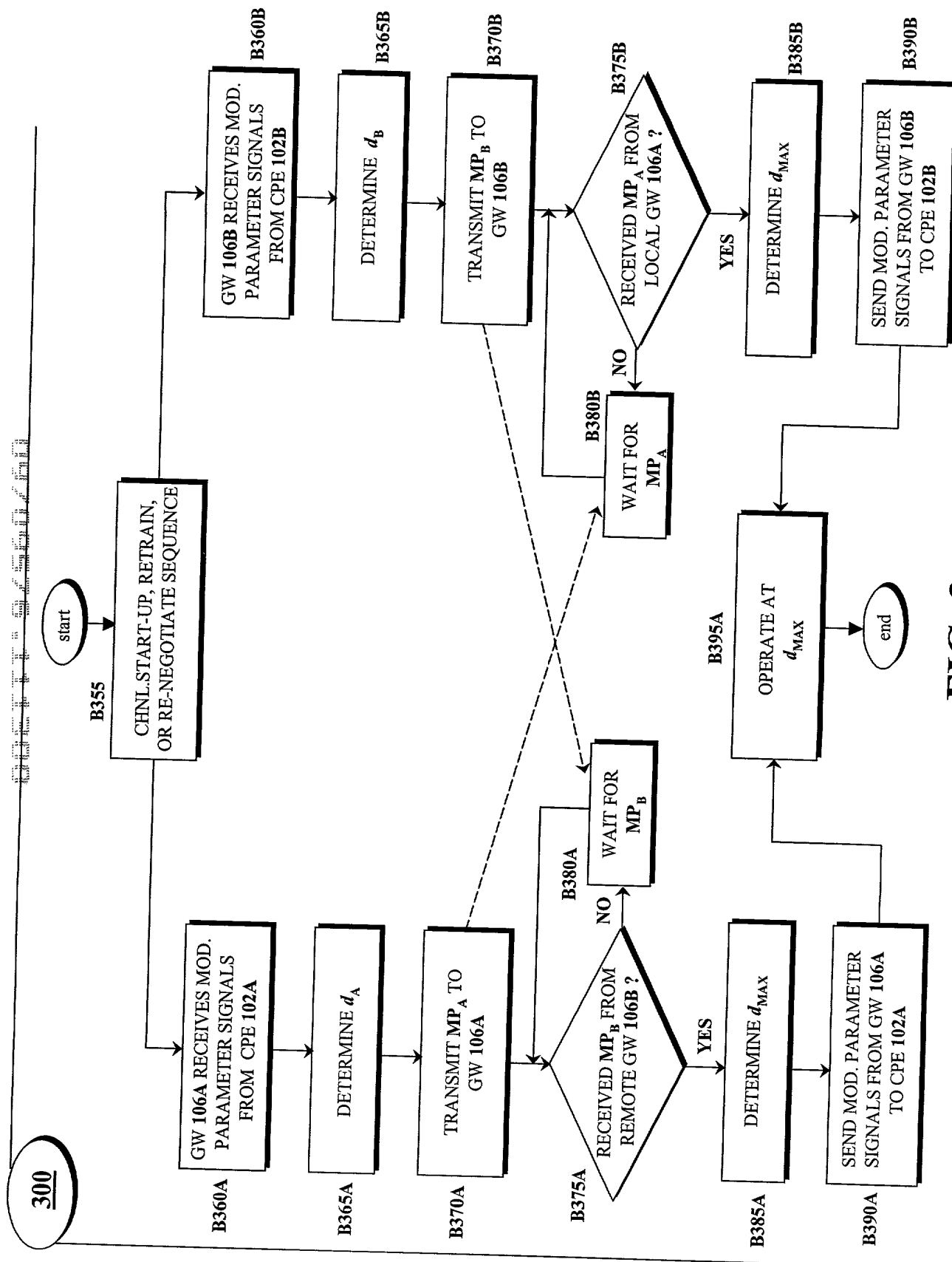
Continuation of  
New  
11.27.173  
13





**FIG. 2**

62111-1-1010-100  
 (New)  
 11-270173  
 513



**FIG. 3**

FOR UTILITY/DESIGN  
CIP/PCT NATIONAL/PLANT  
ORIGINAL/SUBSTITUTE/SUPPLEMENTAL  
DECLARATIONS

RULE 63 (37 C.F.R. 1.63)  
DECLARATION AND POWER OF ATTORNEY  
FOR PATENT APPLICATION  
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PM & S  
FORM

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the INVENTION ENTITLED METHOD OF DATA RATE EXCHANGE FOR TRANSMISSIONS ACROSS A PACKET-BASED NETWORK

the specification of which (CHECK applicable BOX(ES) )  
X A. ☒ is attached hereto.  
BOX(ES) → B. ☐ was filed on \_\_\_\_\_ as U.S. Application No. \_\_\_\_\_ /  
→ C. ☐ was filed as PCT International Application No. PCT/ \_\_\_\_\_ / \_\_\_\_\_ on \_\_\_\_\_  
and (if applicable to U.S. or PCT application) was amended on \_\_\_\_\_

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose all information known to me to be material to patentability as defined in 37 C.F.R. 1.56. Except as noted below, I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT International Application which designated at least one other country than the United States, listed below and have also identified below any foreign application for patent or inventor's certificate, or PCT International Application, filed by me or my assignee disclosing the subject matter claimed in this application and having a filing date (1) before that of the application on which priority is claimed, or (2) if no priority claimed, before the filing date of this application:

PRIOR FOREIGN APPLICATION(S) Number	Country	Day/MONTH/Year Filed	Date first Laid- open or Published	Date Patented or Granted	Priority NOT Claimed
--	---------	----------------------	---------------------------------------	-----------------------------	----------------------

If more prior foreign applications, X box at bottom and continue on attached page.

Except as noted below, I hereby claim domestic priority benefit under 35 U.S.C. 119(e) or 120 and/or 365(c) of the indicated United States applications listed below and PCT international applications listed above or below and, if this is a continuation-in-part (CIP) application, insofar as the subject matter disclosed and claimed in this application is in addition to that disclosed in such prior applications, I acknowledge the duty to disclose all information known to me to be material to patentability as application in 37 C.F.R. 1.56 which became available between the filing date of each such prior application and the national or PCT international filing date of this application:

PRIOR U.S. PROVISIONAL, NONPROVISIONAL AND/OR PCT APPLICATION(S) Application No. (series code/serial no.)	Day/MONTH/Year Filed	Status pending, abandoned, patented	Priority NOT Claimed
60/211,821	15 June 2000	Pending	

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

And I hereby appoint Pillsbury Madison & Sutro LLP, Intellectual Property Group, 1100 New York Avenue, N.W., Ninth Floor, East Tower, Washington, D.C. 20005-3918, telephone number (202) 861-3000 (to whom all communications are to be directed), and the below-named persons (of the same address) individually and collectively my attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith and with the resulting patent, and I hereby authorize them to delete names/numbers below of persons no longer with their firm and to act and rely on instructions from and communicate directly with the person/assignee/attorney/firm/ organization who/which first sends/sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented unless/until I instruct the above firm and/or a below attorney in writing to the contrary.

Name	Address	City	State/Foreign Country	Country of Citizenship			
Paul N. Kokulis	16773	Paul E. White, Jr.	32011	Stephen C. Glazier	31361	Adam R. Hess	41835
Raymond F. Lippitt	17519	Glenn J. Perry	28458	Ruth N. Morduch	31044	William P. Atkins	38821
G. Lloyd Knight	17698	Kendrew H. Colton	30368	Richard H. Zaitlen	27248	Paul L. Sharer	36004
Kevin E. Joyce	20508	G. Paul Edgell	24238	Roger R. Wise	31204		
George M. Sirilla	18221	Lynn E. Eccleston	35861	Jay M. Finkelstein	21082		
Donald J. Bird	25323	Timothy J. Klima	34852	Michael R. Dzwonczyk	36787		
Peter W. Gowdey	25872	David A. Jakopin	32995	W. Patrick Bengtsson	32456		
Dale S. Lazar	28872	Mark G. Paulson	30793	Jack S. Barufka	37087		

(1) INVENTOR'S SIGNATURE: Jovanovic Date: November 9, 2000

First	Middle Initial	Family Name
Slobodan		JOVANOVIC
Residence	Bethesda	MD
City	State/Foreign Country	Country of Citizenship
Post Office Address	6000 Kirby Road, Bethesda, MD	YUGOSLAVIA
(include Zip Code)	20817	

(2) INVENTOR'S SIGNATURE: Mehul Date: November 9, 2000

First	Middle Initial	Family Name
Mehul		MEHTA
Residence	Potomac	MD
City	State/Foreign Country	Country of Citizenship
Post Office Address	1103 Halesworth Drive, Potomac, MD	INDIA
(include Zip Code)	20854	

FOR ADDITIONAL INVENTORS, "X" box ☒ and proceed on the attached page to list each additional inventor.  
☐ See additional foreign priorities on attached page (incorporated herein by reference).

Atty. Dkt. No. PM270173  
(M#)



## DECLARATION AND POWER OF ATTORNEY

(continued)

## ADDITIONAL INVENTORS:

(3) INVENTOR'S SIGNATURE:

Date: November 9, 2000

Zongyao		ZHOU	
First	Middle Initial	Family Name	
Residence	Gaithersburg	MD	
City	State/Foreign Country		Country of Citizenship
Post Office Address	4 Antioch Road, Gaithersburg, MD		P.R. CHINA zyz
(include Zip Code)	20878		

(4) INVENTOR'S SIGNATURE:

Date:

First	Middle Initial	Family Name	
Residence			
City	State/Foreign Country		Country of Citizenship
Post Office Address			
(include Zip Code)			

(5) INVENTOR'S SIGNATURE:

Date:

First	Middle Initial	Family Name	
Residence			
City	State/Foreign Country		Country of Citizenship
Post Office Address			
(include Zip Code)			

(6) INVENTOR'S SIGNATURE:

Date:

First	Middle Initial	Family Name	
Residence			
City	State/Foreign Country		Country of Citizenship
Post Office Address			
(include Zip Code)			

(7) INVENTOR'S SIGNATURE:

Date:

First	Middle Initial	Family Name	
Residence			
City	State/Foreign Country		Country of Citizenship
Post Office Address			
(include Zip Code)			

(8) INVENTOR'S SIGNATURE:

Date:

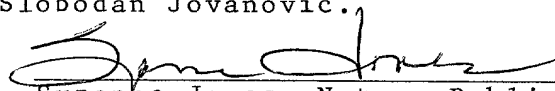
First	Middle Initial	Family Name	
Residence			
City	State/Foreign Country		Country of Citizenship
Post Office Address			
(include Zip Code)			

(9) INVENTOR'S SIGNATURE:

Date:

First	Middle Initial	Family Name	
Residence			
City	State/Foreign Country		Country of Citizenship
Post Office Address			
(include Zip Code)			

I Suzanne Jones, Notary Public in and for the State of Maryland, hereby swear that on this 9th day of November 2000, did appear before me Zongyao Zhou, Mehul Mehta, and Slobodan Jovanovic.

  
 Suzanne Jones, Notary Public  
 Expiration: 01-01-02